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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,703	09/19/2006	John D. Fikes	2060.0150007/HCC/PAC	4669

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EXAMINER	
DAVIS, MINH TAM B	

ART UNIT	PAPER NUMBER
1642	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/553,703	FIKES ET AL.	
	Examiner	Art Unit	
	MINH-TAM DAVIS	1642	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 May 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *41-61* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *41-61* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/21/09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant cancels claims 1-40 and adds new claims 41-61.

Accordingly, Group A, claims 41-46, the combination of SEQ ID NO: 1, SEQ ID NO:2, SEQ ID NO:3, and SEQ ID NO:4, and a method for treating breast cancer are examined in the instant application.

The embodiment of claims 41-61, as drawn to a composition comprising SEQ ID NOs 5-10, and a method for treating a cancer other than breast cancer has been withdrawn from consideration as being drawn to non-elected invention. The embodiment of claims 52-53, 60-61, as drawn to a method for preventing cancer has been withdrawn from consideration as being drawn to non-elected invention.

Claim Rejections - 35 USC § 112, First Paragraph, Scope

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 41-53, 60-61 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a combination of the CTL peptides consisting of SEQ ID NO: 2, SEQ ID NO:3 and SEQ ID NO:4, and the PanDR binding peptide consisting of SEQ ID NO:1, does not reasonably provide enablement for 1) a composition comprising a combination of CTL epitopes and/or analogs of SEQ ID NO: 2, SEQ ID NO:3 and SEQ ID NO:4, each of said peptides is less than **15 amino acids**, and further comprising an additional peptide of less than **25**

amino acids comprising a helper T cell epitope, the PanDR binding peptide of SEQ ID NO:1, and 2) a method for **treating breast cancer**, using a combination of CTL epitopes and/or analogs of SEQ ID NO: 2, SEQ ID NO:3 and SEQ ID NO:4, each of said peptides is less than **15 amino acids**, or a combination of the CTL peptides consisting of SEQ ID NO: 2, SEQ ID NO:3 and SEQ ID NO:4, for reasons already of record in paper of 1/21/09.

The response asserts as follows:

The experimentation required to make and test all of the peptides encompassed by the claimed invention is routine. The present specification provides data on MHC binding and CTL recognition/activation for the peptides of SEQ ID NOs:2-10. Furthermore, the specification provides ample description of assays to make and test peptides that are encompassed by the claimed invention. For example, teaching related to binding affinity can be found, inter alia, at paragraphs 169-174, and assays to detect T cell responses can be found, inter alia, at paragraphs 200-206. Therefore, using nothing more than the teachings of the specification and the general knowledge in the art, one of ordinary skill could make, test, and use the claimed compositions to treat cancer without undue experimentation.

The response has been considered but is not found to be persuasive for the following reasons:

The unpredictability of the art is high. One cannot predict that a peptide of less than15 amino acids and comprises a CTL epitope of SEQ ID NO: 2, SEQ ID NO:3 or SEQ ID NO:4 could still induce a CTL response, because one cannot predict the effect of surrounding amino acids on the function of the CTL epitope of SEQ ID NO: 2, SEQ ID NO:3 or SEQ ID NO:4. One cannot predict that the claimed sequences could bind to MHC and elicit T cells response, due to

the unpredictable effect on MHC binding, and/or CTL recognition or activation **of unknown flanking sequences**, which effect could also depend and/or vary with the size of the amino acid sequence added to the CTL epitope, in view of the teaching of Bergmann et al, Eisenlohr et al, Shastri et al, and Guo et al, all of record. Similarly, one cannot predict that a peptide of less than 25 amino acids and comprising a helper T cell epitope, the PanDR binding peptide of SEQ ID NO:1 would have the activity of SEQ ID NO:1, in view of the above teaching of Bergmann et al, Eisenlohr et al, Shastri et al, and Guo et al, all of record.

The specification, however, does not have sufficient teaching of how to make the claimed peptides. The specification does not disclose which amino acids, and the number of amino acids, that can be added to as flanking sequences of SEQ ID NO:1, SEQ ID NO: 2, SEQ ID NO:3 or SEQ ID NO:4, such that the claimed peptides of less than 15 amino acids and comprising the peptides of SEQ ID NO: 2, SEQ ID NO:3 or SEQ ID NO:4, or the claimed peptide of less than 25 amino acids and comprising the peptide of SEQ ID NO:1 still could induce a specific CTL response, or has the property of helper T cell epitope, respectively. Thus, although it is routine in the art to synthesize any peptide, and to test for CTL response, or the property of helper T cell epitope, however, in view of the above unpredictability, and insufficient guidance in the specification, one would not know how to make the claimed peptides such that they could induce a specific CTL response, or has the property of helper T cell epitope.

MPEP 2164.03 teaches that "the amount of guidance or direction needed to enable the invention is inversely related to the amount of knowledge in the state of the art as well as the predictability of the art. In re Fisher, 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970). The amount of guidance or direction refers to that information in the application, as originally filed,

that teaches exactly how to make or use the invention. The more that is known in the prior art about the nature ot the invention, how to make, and how to use the invention, and the more predictable the art is, the less information needs to explicitly stated in the specification. In constrast, if little is known in the prior art about the nature of the invention and the art is unpredictable, the specification would need more detail as how to make and use the invention in order to be enabling."

Given the above unpredictability, and in view of the complex nature of the invention, a lack of sufficient disclosure in the specification, and little is known in the art concerning the claimed invention, there would be an undue quantity of experimentation required for one of skill in the art to practice the claimed invention, that is commensurate in scope of the claims.

The response asserts as follows:

In addition, the claimed compositions are currently the subject matter of an Investigational New Drug (IND) application to treat cancer (see, specification at Example 15). The IND identification number for the claimed compositions is BB-IND 10802. The potential indications include lung cancer, colorectal cancer, and breast cancer. A Phase 1 study was conducted in lung cancer and colorectal cancer patients, and a Phase 2 study was conducted in lung cancer patients. The IND study is still open. Applicants respectfully point out that MPEP 2107.03 IV states, "[T]hus, as a general rule, if an applicant has initiated human clinical trials for a therapeutic product or process, Office personnel should presume that the applicant has established that the subject matter of that trial is reasonably predictive of having the asserted therapeutic utility."

The response has been considered but is not found to be persuasive for the following reasons:

Although Example 15 discloses that clinical trials were initiated using all ten peptides of SEQ ID NOs: 1-10 for treating lung and colorectal cancers, Example 15 does not disclose that clinical trials were initiated for breast cancer. One cannot predict that breast cancer would be successfully treated with SEQ ID NOs:1-4, because different cancers have different properties and do not predictably response the same way to the same drug. Kaiser (Science, 2006, 313, 1370, of record) teaches that mutation differences from tumor to tumor, and that said difference could explain why 90% of tumor drugs fail in patients, see 3rd col., 2nd to last para. Further, although there are some antibodies that are effective in treating some cancers, Bodey et al, 2001, Expert Opinion Biological Therapy, 1(4): 603-17, teach that a monoclonal antibody directed toward the identical antigen in various tumors may have different therapeutic efficacy, and that the results of the early immunotherapies suggest that careful selection of both the antigen target and the monoclonal antibody employed is critical to the success of monoclonal antibody mediated cancer therapy (p.611, second column, item under Expert Opinion, bridging p.612). Further, immunotherapy is unpredictable, in view of the teaching of Mellman, Boon, Kirkin et al, Smith, Bodey et al, 2000, and Lee et al, all of record. Moreover, even if breast cancer could be treated with the peptides of SEQ ID NOs: 1-10, one cannot predict that breast cancer could be treated with SEQ ID NOs: 1-4, because the effect of the absence of SEQ ID NOs: 5-10 on the efficacy of cancer treatment cannot be predicted.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 41-50, 54-58 are rejected under 35 U.S.C. 102(e) as being anticipated by Fikes et al, US 6,602,510 B1, filed on 04/05/2000, for reasons already of record in paper of 1/21/09.

The response asserts as follows:

New claims 41-54 each require a composition comprising at least the peptides RLLQETELV (SEQ ID NO:2), YLQLVFGIEV (SEQ ID NO:3), LLTFWNPPV (SEQ ID NO:4), SMPPPGTRV (SEQ ID NO:5), KLBPVQLWV (SEQ ID NO:6), KVFGSLAFV (SEQ ID NO:7), and YLSGADLNL (SEQ ID NO:8). Fikes et al. does not disclose the peptide YLSGADLNL (SEQ ID NO:8). Therefore, Fikes et al. does not disclose each and every element of the claims presented herein.

The response has been considered but is not found to be persuasive for the following reasons:

The elected combination species is SEQ ID NO:1, SEQ ID NO:2 and SEQ ID NO:3, which is taught in the art. SEQ ID NO:4 is rejoined with SEQ ID NO:1, SEQ ID NO:2 and SEQ ID NO:3, because it is disclosed in the art.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 51, 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fikes et al, US 6,602,510 B1, filed on 04/05/2000, in view of Reed et al, US 6,432,707 B1, filed on 06/22/2000, for reasons already of record in paper of 1/21/09.

The response asserts as follows;

As stated above, new claims 41-54 each require a composition comprising at least the peptides RLLQETELV (SEQ ID NO:2), YLQLVFGIEV (SEQ ID NO:3), LLTFWNPPV (SEQ ID NO:4), SMPPPGTRV (SEQ ID NO:5), KLBPVQLWV (SEQ ID NO:6), KVFGSLAFV (SEQ ID NO:7), and YLSGADLNL (SEQ ID NO:8). Fikes et al. does not disclose the peptide YLSGADLNL (SEQ ID NO:8). The deficiencies of Fikes are not cured by Reed. Reed generally discloses the use of adjuvants, but does not disclose the peptides of the invention. Therefore, Fikes et al. and Reed et al. do not teach or suggest each element of the claims.

The response has been considered but is not found to be persuasive for the following reasons:

The elected combination species is SEQ ID NO:1, SEQ ID NO:2 and SEQ ID NO:3, which is taught by the art. SEQ ID NO:4 is rejoined with SEQ ID NO:1, SEQ ID NO:2 and SEQ ID NO:3, because it is disclosed in the art.

Conclusion

No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MINH-TAM DAVIS whose telephone number is 571-272-0830. The examiner can normally be reached on 9:00 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, LARRY HELMS can be reached on 571-272-0832. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MINH- TAM DAVIS
August 25, 2009

/Larry R. Helms/

Supervisory Patent Examiner, Art Unit 1643